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Notice of Allowability

Application No.

10/713,023

Examiner

Derek L. Dupuis

Applicant(s)

TAKAGI, KAZUHISA

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed on 7/7/2005.
2. ☒ The allowed claim(s) is/are 1-8 and 10.
3. ☒ The drawings filed on 17 November 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 6 and 7, in combination with the amendment to the claims filed 7/7/2005, with respect to the rejection of claims 1-9 under 35 U.S.C. 103(a) have been fully considered and are persuasive. The rejection of claims 1-9 has been withdrawn.
2. Applicant's arguments, see page 6, in combination with the amendment to the specification and claims filed 7/7/2005, with respect to the objections to the specification and to claims 2-8 have been fully considered and are persuasive. The objections to the specification and to claims 2-8 have been withdrawn.
3. The examiner acknowledges that the applicant has canceled claim 9 and has added new claim 10.

Allowable Subject Matter

4. Claims 1-8 and 10 are allowed.
5. The following is an examiner's statement of reasons for allowance:
6. Claims 1-8 and 10 are allowable over the prior art of record because the latter, either alone or in combination, does not disclose nor render obvious a semiconductor optical waveguide device comprising a plurality of bent waveguides embedded in a semiconductor substrate with at least two optical waveguide returning parts interposed between a light input end and a light output end of the waveguides wherein each returning part comprises a multiplexing portion and a light reflecting part on a rear end side of the multiplexing portion inside of the substrate wherein the rear end side of the multiplexing portion has an optical mirror surface and wherein each of the light reflecting parts includes a rectangular recess in the substrate and a

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reflecting film on a side surface of the recess that faces the rear end side of the multiplexing portion in combination with the rest of the claimed limitations.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. *Seki et al (US 4,790,615)* teach an optical device with a plurality of s-shaped bent waveguides and with at least two optical returning parts as shown in figure 2. The returning parts include a multiplexing portion and a reflecting portion. However, Seki et al does not disclose nor render obvious a multiplexing portion inside of a semiconductor substrate wherein a light reflecting part is on a rear end side of the multiplexing portion and wherein the rear end side of the multiplexing portion has an optical mirror surface and wherein each light reflecting part includes a rectangular recess in the substrate wherein a reflecting film is located on a side surface of the recess that faces the rear end side of the multiplexing portion.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek L. Dupuis whose telephone number is (571) 272-3101. The examiner can normally be reached on Monday - Friday 8:30am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Derek L. Dupuis
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Frank G. Font
Supervisory Patent Examiner
Technology Center 2800